

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of Christopher Batich et al.  
Serial No. 09/965,740  
Publication No. US 2002/0177828  
Filed: 09/28/2001  
For: Adsorbent Materials with Covalently Bonded, Nonleachable Polymeric  
Antimicrobial Surfaces, and Methods for Preparation  
Atty. Docket No. QMT1.1-CIP-US  
Group Art Unit: 3761  
Examiner: Catherine Lynne Anderson

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION UNDER 37 C.F.R. § 1.132**

Dr. Christopher Batich declares as follows:

**Declarant**

I am a Professor in the Biomedical Engineering Department at the University of Florida and one of the named inventors of the present application. I make this statement in support of the patentability of U.S. patent application 09/965,740 (the "present application").

I have assigned rights to the present invention to the University of Florida who has assigned its rights in the invention to the University of Florida Research Foundation. I presently own stock and options amounting to less than a 7% interest in Quick-Med Technologies, Inc.

Quick-Med Technologies, Inc. and the University of Florida Research Foundation are both assignees of the present application.

**Credentials**

I received a Ph.D. degree in Organic Chemistry from Rutgers University and continued with post-doctoral studies in physical chemistry at the University of Basel. My early industrial career involved work as a Quality Control Chemist with White Laboratories and a Staff Scientist with the Dupont Company.

My teaching career began in 1981 with the Materials Science and Engineering Department at the University of Florida, achieving the rank of Professor in 1988. In 2002, I became a Professor in the Biomedical Engineering Department at the University of Florida. During my career as a professor I have supervised the theses and dissertations of 22 masters and 17 doctoral degree

awardees. My publications include U.S. Patents and Patent Applications, as well as numerous publications in scientific journals including the Journal of the American Chemical Society, Biomaterials Transactions, Journal of Biomedical Materials Research, Journal of Polymer Science, Journal of Dental Research, and Journal of Nanoscience and Nanotechnology.

The attached CV further exemplifies my qualifications.

### Introduction

My declaration is submitted to support the conclusion that the disclosure of U.S. 6,797,856 to Kolb et al. ("Kolb") does not disclose polymers of diallyldimethyl ammonium chloride ("polyDADMAC") as components, specifically binding agents, of a pant-like absorbent swimwear garment.

The Examiner has asserted that Kolb discloses a composition comprising a substrate having a coating consisting of polymeric molecules formed by the polymerization of a diallyldialkylammonium salt, and more specifically, polymers of the monomer diallyldimethylammonium chloride (DADMAC), or poly(DADMAC). The Examiner cites column 6, lines 16-27 of Kolb as support for the assertion that Kolb discloses polymers of DADMAC, also known as polyDADMAC.

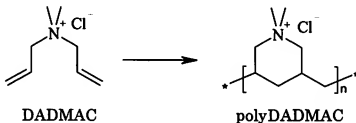
It is my opinion that Kolb does not disclose the use of poly(DADMAC), nor of polymers of a diallyldialkylammonium salt, as a binding agent component of a swimwear garment or swim pant.

### Discussion

I have reviewed Kolb (U.S. Patent 6,797,856) as well as the specification and the pending claims of the above-captioned U.S. Patent Application 09/965,740.

The above-identified patent application exemplifies the use of polymers of diallyldimethylammonium chloride (DADMAC). When DADMAC is polymerized it forms poly(diallyldimethylammonium chloride) or polyDADMAC. Therefore, the above-identified patent application is concerned with polyDADMAC as a component of an antimicrobial substrate. The use of the monomer DADMAC as a component of the antimicrobial substrate is not taught by the inventors of the above-identified patent application.

The structural and chemical relationship of DADMAC to polyDADMAC is illustrated below.



Within the passage of Kolb cited by the Examiner, suitable binding agents are described. Kolb lists many compounds as binding agents including cationic compounds, biological cationic polymers, inorganic cationic species, and polymer matrices [column 6, lines 16-19]. Kolb further exemplifies these compounds using a broad class of examples of polymers, non-polymeric compounds, and other substance types. Kolb makes no statement that the compounds within the list are limited to polymers only. Therefore, one reading the description must conclude that Kolb describes the specific compounds to be included within the list of suitable binding agents. Some of the compounds are specifically described as polymers. For example, biological cationic polymers, chitosan, SILGARD®, and polyacrylamides are polymers that are disclosed as binding agents [column 6, lines 22-25]. Some of the listed compounds may or may not be polymers. For example, quaternary ammonium, debonder, and softener are disclosed [column 6, lines 23-27] and are generic terms that could refer to either a polymer or a non-polymeric compound. Other compounds are not polymers. For example, liposome, diallyldimethyl ammonium chloride (DADMAC), and octadecyldimethoxysilylpropylammonium chloride are not polymers.

Kolb does not disclose or suggest that polymers of diallyldimethyl ammonium chloride, nor polyDADMAC, are to be considered. Therefore, I conclude that Kolb does not disclose polyDADMAC as a binding agent component of a pant-like absorbent swimwear garment.

On further review of Kolb, I did not find any reference to the generic class of compounds, diallyldialkyl ammonium salts, recited in claims of the above-captioned application. In Kolb there is no mention of diallyldialkyl ammonium salts as either monomers or polymers. Thus, I conclude that Kolb does not disclose polymers of diallyldialkyl ammonium salts as suitable binders for use in the invention.

#### Verification

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

  
Dr. Christopher D. Batich

November 6, 2009

## CURRICULUM VITAE

Christopher D. Batich, Ph.D.

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### Professional Experience

2008-Present	Associate Director, Clinical and Translational Science Institute
2002-Present	Professor, Biomedical Engineering Department
1997-2002	Founding Director, UF Graduate Biomedical Engineering Program (Interim first year)
1981-Present	Materials Science and Engineering Dept., University of Florida Gainesville, FL. (Professor since 1988)
1974-1981	Staff Scientist, Central Research Dept., DuPont Co., Wilmington, DE
1967-1969	Teaching Assistant, Chemistry Dept., Rutgers University, New Brunswick, NJ
1965-1967	Quality Control Chemist, White Laboratories (pharmaceutical company), Kenilworth, NJ

### Education

1971-1974	University of Basel (Switzerland); Post-doctoral (physical chemistry) with Professor Edgar Hellbrunner, Director of the Physical Chemistry Institute.
1967-1971	Rutgers University; Ph.D.(organic chemistry), 1974; thesis advisor, Edel Wasserman
1961-1965	While residing in New Jersey, attended The Pennsylvania State University and obtained a B.S. (pre-medicine), 1965. Financial support was by a PTA scholarship, various loans (all repaid) and part-time work in kitchens, libraries, and laboratories.

### Professional Membership

American Chemical Society (ACS)
Polymer Chemistry Division
Polymeric Materials Science and Engineering Division
Society of Biomaterials
Membership Committee (1995-2000)
Awards Committee (1996-7)
Dental Materials Special Interest Group, vice chair (2000-2005)
Faculty Advisor for Local Student Chapter (1997-present)
American Institute of Medical and Biological Engineers (AIMBE)
Academic Council (1997-2002)
College of Fellows (1999-present)

### Professional Activities and Honors

Phi Lambda Upsilon (Honorary Chemistry Group). Section Vice-President, 1970  
Chairman: Organic Chemists Club (Delaware), American Chemical Society, 1978  
Chairman: College-Industry Relations Committee, Delaware Section (ACS), 1979 & 1980  
Chairman: North-east ESCA Users Group, Nomination Committee, 1980-1981  
Member: Florida Section ACS, Public Affairs Committee, 1983  
College of Engineering Sabbatical, 1990-1991; Akzo Biomedical Research Center, Oberrburg, Germany  
Award for Excellence in Teaching ("TIP"), F-1995  
Listed in Marquis' Who's Who in Medicine and Healthcare, 1st Edition, 1996.

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Listed in The Official Who's Who of American Inventors, 5th Edition, 1998-99.  
Professional Excellence Program Award ("PEP"), 1998  
American Institute of Medical and Biological Engineering (AIMBE) Fellow (1999)  
Co-Chair, AIMBE Public Information Committee (1999-present)  
Who's Who in Science and Engineering, Millennium Edition, (2000)  
College of Engineering Nominee for the 2002 Ernest L. Boyer International Award of Excellence in Teaching, Learning and Technology (2001)

University Service

Graduate Student Co-Coordinator for Materials Department, 1984-1990  
Faculty Senate, 1986-1988  
Biomedical Engineering, curriculum co-organizer and advisor, 1984-1998  
Biotechnology Patent Committee, 1984-1995  
FEEDS coordinator for off-campus students, 1987-1991  
Graduate Council Fellowship Selection Committee for Engineering, 1987-1990  
Search Committee for UF, VP Research and Dean of Graduate School, 1993  
College of Engineering, Tenure and Promotion Committee, 1991-1994  
Chairman: College of Engineering Biomedical Engineering Graduate Academic Program (BEGAP), 1994-1998  
Member MD/PhD Program Committee, 1994-2000  
UF Advisory Board of the University of Florida's Institute for Science Policy (1998-2002)  
Biomedical Engineering Department Faculty Search Committee (2002- January 2005)  
Materials Science and Engineering Department Curriculum Committee (2002-4)  
University of Florida Fringe Benefits Committee (2001-2003)  
Major Analytical Instrumentation Center Advisory Board (2002-present)  
University Faculty Nominations Committee (2004-present)  
Institute for the Advanced Study of Emerging Pathogens Oversight Board (2004-present)  
General Clinical Research Center Advisory Committee (UF) 2005-present  
Department of Surgery Research Advisory committee (UF) 2005-present  
Bioterrorism Task Force (2003-2004)  
Long-range Planning Committee for MSE (2005-present)  
Endowed Chair Committee for MSE (2004-present)  
Nanoposition Search Committee for MSE (2003-2006)  
Materials Science and Engineering Department Curriculum Committee (2005-present)  
Search Committee for Emerging Pathogens Institute Director (2006-April 2007)  
Emerging Pathogens Institute Steering Committee (2004-present)  
Clinical and translational science awards, NIH proposal preparation committee (2005-present)  
Materials Science and Engineering Department Long-Range Planning Committee (2006-present)

Recent NIH Reviewing Activities (does not include past NIH/SBIR or NSF activities)

July 16, 2008 – Special Emphasis Panel on "Neurodevices and Bioengineering" - ZRG1 ETTN-A(03) (Role: Chair)  
June 12-13, 2008 – Oncological Sciences Integrated Review Group for Developmental Therapeutics Study Section  
October 20, 2008 - Special Emphasis Panel on "Polymers and Probes" - ZRG1 BST-A(02) (Role: Member)

Selected Invited Presentations

1984 "Surface Derivatization Reactions," Tennessee Eastman Co., Kingsport, TN  
"Surface Derivatization Reactions," W.R. Grace Co., Columbia, MD  
"Surface Derivatization Reactions," Los Alamos National Laboratory, NM  
"Surface Derivatization Reactions," Sandia National Laboratory, NM  
Federation of Analytical Chemistry and Spectroscopy Society, FACSS Sept. "The Last and Next Decade in Surface Analysis"  
Kratos Users Group, Poconos, "Angular XPS Studies of Ga/As"  
"Surface Studies of Polymers," Kimberly-Clark, Roswell, GA

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- 1985 "Surface Studies of Polymers," C.R. Bard, Inc., Murray Hill, NJ  
American Vacuum Society Meeting (Florida Section) -Copper/FEP Adhesion Silanes, Surfaces and Interfaces Symposium (June), Snowmass, CO
- 1986 FEP/Copper Adhesion, General Electric Solid State Meeting, Gainesville, FL  
Biomedical Applications of XPS, Spectroscopy Society of Pittsburgh (April)  
Tutorial lecture on "Surface Probes of Polymer Structure and Properties," Polymer Products Department, DuPont Co., Wilmington, DE  
Polymer Surface Studies, Johnson & Johnson, Medical Polymers Research Committee Meeting, Gainesville, FL
- 1987 Symposium on Hyphenated Techniques, Pittsburgh Conference on Analytical Chemistry Surface Analysis, Monsanto Corp., Pensacola, FL  
Department of Surgery, U. Florida Medical School "Research Projects"  
Engelhard Industries, "Surface Analysis," Woodridge, NJ
- 1988 IBM Adhesion Course, Boca Raton, FL (April)  
"Surfaces of Catheters," ASTM-F4 Meeting, Atlanta, GA
- 1989 "Surfaces of Catheters," Res. Calc. Kinetics Soc., St. Louis, MO  
"The Effect of Polymer Matrix on the Growth of Tissue," 3rd Annual Research Highlights Meeting of the Center for Surface Science and Engineering, UF, Gainesville  
"Incineration of Plastics," Center for Aeronomy, UF, Gainesville  
"Surfaces of Biomaterials," North Carolina State University, Raleigh, N.C.
- 1990 "Incineration of Plastics," Amer. Inst. of Chem. Eng. Nat'l. Meeting (March)
- 1991 "Surfaces Analysis of Biomaterials," Akzo (Amhem, Netherlands)  
"Surfaces of Biomaterials," Max-Planck Institute for Polymer Research (Mainz, Germany)  
"Overview of Research," ARLO (Obenburg, Germany)  
"Inhibition of Oxalate Encrustation," ROCK Society Meeting (Cleveland)
- 1992 "Choosing the Right Surface Analytical Method for Polymers," Royal Society of Chemistry Annual Congress; April 14 (Manchester, UK)  
"Safe Plastics," at Treco Center, Course on Disposal of Biomedical Waste, June 1, 1992, (Gainesville)
- 1993 Biomaterials for Tissue Regeneration, Center for Wound Healing, UF
- 1994 Silicone Toxicity Symposium, Oct. 4 (Dallas, TX)
- 1995 Immunology of Silicone Symposium, NIH/NCI, March 1995 (Bethesda, MD)  
Society For Biomaterials - pH Sensitive Polymers (March, San Francisco)  
Center for Occupational Health - Silicones (September, Detroit)
- 1996 "Tissue Regeneration," Monsanto Co. (January, St. Louis, MO)
- 1998 "pH Sensitive Drug Delivery," Pharmacology Department. Seminar, (September, University of Florida)
- 1999 "Surface Changes of Biomaterials - Needed Data," 7th Annual Symposium of the Florida Chapter of the American Vacuum Society and the 17th Annual Meeting of the Florida Society for Microscopy (March, University of Central Florida, Orlando, FL)
- 2000 "Biomedical Engineering and Biomaterials" Guest speaker for the 37th Annual Junior Science, Engineering and Humanities Symposium (JSEHS)  
"Development and In Vitro Evaluation of Sustained Release Ilomastat Devices" "Transactions of the society of Biomaterials" Annual meeting May 2000.  
"Microspheres and Coatings of pH-sensitive Polymers for Biomedical Engineering Uses," 2000 Florida Inter-Research Experience for Undergraduates (NSF Funded) July 2000.
- 2001 American Institute of Medical and Biological Engineering (AIMBE) Annual Meeting, PR needs in Biomedical Engineering
- 2003 Testimony before: "General and Plastic Surgery Devices Panel of the FDA Medical Devices Advisory Committee," October 15, 2003, Gaithersburg, MD.
- 2006 "Iron-Containing Deposits and Neurodegeneration," Aging & Rehabilitation Research Seminar Series, March 20, 2006. (UF)  
"Alternative Drug Delivery Methods," South East Regional interdisciplinary Symposium, University of Florida AAPS Student Chapter, May 19-21, 2006, Gainesville, FL.  
"Reducing MRSA infections," 21st Century Health Care Caucus (Sam Rayburn Office Bldg.), June 6-7, 2006, Washington, DC.
- 2007 "Engineering in Dentistry," UF College of Dentistry Research Day (opening lecture to Dental Faculty), April 2007. (UF)
- 2008 "Iron Imaging and Analysis in Neurodegenerative Diseases," Mark Davidson, Joanna F. Collingwood, Saurav Chandra,

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- Albina Mikhaylova, Thomas Eskin, Jon Dobson, John Forster, and Christopher Batich, invited talk presented at the Conference on Computational Neuroscience 2008, February 20-21, 2008, University of Florida, Gainesville, Florida
- "Engineering Capabilities for Research," Christopher Batich, presentation at Brain Tumor Workshop, April 30, 2008, University of Florida, Gainesville, Florida
- 2009 "The Clinical and Translational Science Institute" presented at the Jacksonville Shands Hospital Celebration of Research Day, May 21.

Selected Courses Taught ( \*videotaped course, "FEEDS")

Introduction to Polymer Science\*  
Polymer Physics  
Instrumental Methods of Polymer Analysis\*  
Vacuum Science and Technology (AVS short course, 1983,1984)  
Surface Analysis (MAIC short course, 1984-1987)  
Biomaterials\*  
Tissue Engineering  
Polymer Composites (33%)  
Thin Film Adhesion (AVS short course, San Jose, March 1986; Meadowlands, NJ, September 1987)  
2002 Scaffolds for tissue engineering (part of class on stem cells at the UF Health Center), also 2003-present

Publications/Reviewed (excluding patents, \* indicates invited paper)

1. "Mass Spectral Evidence for Catenanes Formed via a Mobius-Strip Approach," D. Ben-Effraim, C. Batich, and E. Wasserman, *J. Amer. Chem. Soc.*, **92**, p. 2123 (1970).
2. "The Photoelectron Spectra of Cyclooctatetraene and its Hydrogenated Derivatives," C. Batich, P. Bischof, and E. Heilbronner, *J. Electron Spectrosc.*, **1**, p. 33 (1972).
3. "Photoelectron Spectra of Phosphabenzene, Arsabenzene, and Stibabenzene," C. Batich, E. Heilbronner, V. Hornung, A. J. Ashe III, D. T. Clark, U. T. Cogley, D. Kilcast, and I. Scanlan, *J. Amer. Chem. Soc.*, **95**, p. 928 (1973).
4. "Ionization Potentials of Deformed Pi-Bonds," C. Batich, O. Emmer, E. Heilbronner, and J. Wiseman, *Angew. Chem., Int. Ed. Eng.*, **12**, p. 312 (1973).
5. "Bemerkung zur Gleichheit der Aufspaltung  $\epsilon$  (zwischen den ersten beiden Pi-Ionisationspotentialen) und  $\epsilon$  zwischen den entsprechenden  $r$  - Uebergangsennergien) des Spiro (4,4) nonatetraens," C. Batich, E. Heilbronner, and M. Semmelhack, *Helvetica Chimica Acta*, **56**, p. 2110 (1973).
6. "The Photoelectron Spectra of Alkyl Peroxides," C. Batich and Waldemar Adam, *Tell. Lett.*, p. 1467 (1974).
7. "The Ionization Energies of Bridged <1A> Annulenes and of Dicyclohepta <cd,gh> Pentalene," C. Batich, E. Heilbronner, and E. Vogel, *Helvetica Chimica Acta*, **57**, p. 2288 (1974).
8. "Equivalence of the Energy Gaps  $\epsilon$  (1,2) and  $\epsilon$  (1,2) Between Corresponding Bands in the Photoelectron (I) and Electronic Absorption (E) Spectra of Spiro <4,4> nonatetraene. An Amusing Consequence of Spiro Conjugation," C. Batich, E. Heilbronner, E. Rommel, M. Semmelhack and J. S. Foos, *J. Amer. Chem. Soc.*, **96**, p. 7662 (1974).
9. "The Electronic Structure of Vinyl Ethers and Sulfides with Interrupted Conjugation Examined by Photoelectron Spectroscopy," C. Batich, E. Heilbronner, C. B. Quinn, and J. Wiseman, *Helvetica Chimica Acta*, **59**, p. 512-522 (1976).
10. "Photoelectron Spectroscopy of Bis (-allyl) Nickel and Its Methyl Substituted Derivatives: Support for the Near Validity of Koopmans' Theorem," C. Batich, *J. Amer. Chem. Soc.*, **98**, p. 7585-7590 (1976).
11. "Surface Characterization of Acid- and Base-treated Chromosorb W by Electron Spectroscopy for Chemical Analysis," M.A. Kaiser and C. Batich, *J. of Chromatography*, **175**, p. 174-177 (1978).
12. "Radical Cation States of 2,3,5,6-Tetramethylenenorbornane, 2,3,5,6-Tetramethylenebicyclo <2.2.2> Octane and of Related Compounds," M. Mohraz, C. Batich, E. Heilbronner, P. Vogel, and P. A. Carrupt, *Recl. Trav. Chem. Pays-Bas*, **95**, p. 362-367 (1978).
13. "Electronic Structure of Metalorganic Compounds 6. The Photoelectron Spectra of Ni, Pd, Di-allyl," M. Bohm, R. Gleiter, C. Batich, *Helvetica Chim. Acta*, **63** (4), p. 990-1005 (1980).
14. "Chemical Labels to Distinguish Surface Functional Groups Using X-ray Photoelectron Spectroscopy (ESCA)," C. Batich and R. Wendt, *ACS Symposium Series No. 162*, p. 221-235. "Photon, Electron and Ion Probes of Polymer Structure and Properties," D. Dwight, T. Farbish, and H. R. Thomas, ed. (1981).

15. "X-ray Photoelectron Spectroscopy Study of the Effect of Ozone on Various Styrene/Butadiene Co-polymers," K. Stephens, M. Ammons, C. Batich, C. Beatty, and W. Swartz, ACS Symposium Series No. 229, "The Effects on Hostile Environments as Coatings and Plastics," pp. 279-290 (1983).
16. "X-ray Photoelectron Spectroscopy of Nitroso Compounds," C. Batich and D. Donald, J. Amer. Chem. Soc., p. 2758 (1984).
17. "Surface Studies of Calculi Deposition on Foley Catheter Materials," C. Batich, C. Cheng, C. Johnson, V. Rodriguez, and S. Batich, Biomaterials Transactions, Volume VII, p. 31 (1984).
18. "Matrix Mineral Configuration in Whewellite Kidney Stones: Ultrastructural Analysis," L. Ogbugi, C. Batich, and B. Finlayson, Urolithiasis and Related Clinical Research, edited by P. O. Schwillie, L. H. Smith, W. G. Robertson, and W. Vahlensieck (Plenum Pub. Corp.), pp. 711-714 (1984).
19. "Ultrastructure of Whewellite Kidney Stones: Electron-analytical Investigation," L. Ogbugi, C. Batich, and B. Finlayson, J. Ultrastructural Research, 90, p. 1-8 (1985).
20. "Polymers as Moisture Barriers to Maintain Seed Quality," S. West, S. Loftin, M. Wahl, C. Batich, and C. Beatty, Crop Sci., 25, p. 941-945 (1985).
21. "XPS Studies of Polymeric Surfaces and Interfaces," C. Batich, Surfaces Silanes and Interfaces, ed. D. Lyden, Gordon and Breach Science Pub., NY, pp. 215-234 (1986).
22. "Custom-made Vaginal Balloons for Strengthening Circumvaginal Muscle Strength," R. Abrams, C. Batich, M. Dougherty, P. McKey, Y. C. Un, and H. Parker, Biomaterials, Medical Devices and Artificial Organs, 14, pp. 239-248 (1986).
23. "Surface Modification: I. Graft Polymerization of Acrylamide Onto LDPE by Ce<sup>4+</sup> Induced Initiation," C. Batich and A. Yahiaoui, J. Polym. Sci., Polym. Chem. Ed., 25, p. 3479-3488 (1987).
24. "Surface Segregation and Low Temperature Oxidation of Ni-Cr Alloys," S. Jeng, P. Holloway, C. Batich, and S. Hofmann, J. Vac. Sci. Tech., A5 (4), p. 650-651 (1987) (summary abstract).
25. "The Effect of Exercise on the Circumvaginal Muscles: Pilot Study Results," M. Dougherty, R. Abrams, C. Batich, P. McKey, and R. Thomas, Florida Nursing Review, 2, pp. 12-13 (1987).
26. "Effect of Exercise on the Circumvaginal Muscles (CVM)," M. Dougherty, R. Abrams, C. Batich, K. Bishop, and P. Gimotty, Neurology and Urodynamics, 8, pp. 189-190 (1987) (extended abstract).
27. "New Attachment Formation Following Controlled Tissue Regeneration Using Biodegradable Membranes," I. Magnusson, C. Batich, and B. Collins, J. Periodontology, 59, pp. 1-6 (1988).
28. "Water and Abrasive Effects on 3-body Wear of Dental Composites," D. Sarrett, K.-J. Solderholm, and C. Batich, J. Dental Research, 67, p. 362 (1988) (reviewed abstract).
29. "Chemical Derivatization Surface Analysis," C. Batich, J. Applied Surface Science, 32, pp. 57-73 (1988).
30. "The Dynamic Characteristics of the Circumvaginal Muscles (CVM) in Non-parturient and Parturient Women," J. Samples, M. Dougherty, R. Abrams, and C. Batich, JOGNN, May issue, pp. 194-201 (1988).
31. "Co-combustion in Community Waste to Energy Systems," A. Green, et al., in Co-Combustion, ed. A. Green, pp. 13-28 (1988). Joint Power Generation Conference, Philadelphia, PA, September 1988.
32. "Variation in the Apparent Coefficient of Friction of Wheat on Galvanized Steel," S. A. Thompson, R. A. Bucklin, C. D. Batich, and I. J. Ross, Am. Soc. Agr. Eng., 31, p. 1518-1524 (1988).
33. "Toxic Hydrolysis Product from a Biodegradable Foam Implant," C. Batich, R. King, and J. Williams, J. Biomed. Mater. Res.: Applied Biomaterials, 23 pp. 311-319 (1989).
34. "Polyaniline via Schiff Base Chemistry," C. Batich, P. H. Gebert, D. B. Tanner, and S. L. Herr, Synthetic Metals, 29, pp. E371-376 (1989).
35. "The Effect of Exercise on the Circumvaginal Muscles in Postpartum Women," M. C. Dougherty, K. R. Bishop, R. M. Abrams, C. D. Batich, and P. A. Gimotty, J. of Nurse-Midwifery, 1, p. 8-14 (January/February 1989).
36. "Apatite Deposition on Urinary Catheter Materials," B. Piper and C. Batich, Transactions of the Society of Biomaterials, 12, p. 221 (1989).
37. "Chain Propagation/Step Propagation Polymerization. III. An XPS Investigation of Poly(oxyethylene)-b-Poly(pivalolactone) Telechelomer," K. Wagener, C. Batich, B. Kirsch, and S. Wanigatunga, J. Polym. Sci.: A: Polym. Chem., 27, pp. 2625-2631 (1989).
38. "Surface Passivation of Ni/Cr Alloy at Room Temperature," S. Jeng, P. Holloway, C. Batich, Surface Science, 227, p. 278 (1989).
39. "Chromatic Changes in Polyaniline Films," C. Batich, H. Laitinen, and H. Zhou, J. Electrochem. Soc., 137, pp. 883-885 (1990).
40. "Surface Morphology Study of Foley Catheter Balloon After Inflation," C. Batich, and B. Piper, Transactions of the Society of Biomaterials (1990 meeting), 13, p. 117 (1990).



41. "Synthesis and Applications of a Vinylsilazane Preceramic Polymer," Wm. Toreki, C. Batich, M. Sacks, A. Morrone, *Ceram. Eng. Soc. Proc.*, **11** (9-10), pp. 1371-1386 (1990).
42. "Oxalate Degradation by Alginate Microencapsulation of Oxalobacter Formigenes," F. Vaghefi, C. Batich, C. Shevock, *Transactions of the Society of Biomaterials* (1990 meeting) **13**, p. 102 (1990).
43. "Toxic Products from Co-Combustion of Institutional Waste," A. Green, C. Batich, D. Powell, and et al., 83rd Annual Meeting of the Air and Waste Management Association, Forum 90, June 24-29, 1990, Pittsburgh, Pennsylvania.
44. "The Polymerization of a Functionalized Aniline Monolayer," H. Zhou, R. Stern, C. Batich and R. Duran, *Makromol. Chem. Rapid Commun.*, **11**, 409 (1990).
45. "Water and Abrasive Effects on Three-Body Wear of Composites," D.C. Sarrett, K.J.M. Soderholm, C.D. Batich, J. Dental Research, **70**, pp. 1074-1081 (1991).
46. "TEM Microstructural Analysis of Ceramic Powders Derived from the Pyrolysis of Polyvinylmethylsilazane," A.A. Morrone, Wm. Toreki and C.D. Batich, *Materials Letters* **11**, (1,2), pp. 19-25 (1991).
- 47.\* "Materials Used in Breast Implants: Silicones and Polyurethanes," C. Batich and D. DePalma; J. of Long-Term Effects of Medical Implants, **1**, pp. 255-268 (1992).
- 48.\* "Substitutes for Chlorinated Plastics," K. Wagener, C. Batich and A. Green, pp. 155-169 in "Pollution Prevention and Medical Waste Incineration," A. Green, editor; Reinhold van Nostrand, Pub. N.Y., NY (1992).
49. "Polymer-Derived Silicon Carbide Fibers with Improved Thermomechanical Stability," W. Toreki, C. Batich, M.D. Sacks, M. Saleem, and G. Choi, pp. 761-769 in "Better Ceramics Through Chemistry V," edited by M.J. Hampden-Smith, W.G. Klemperer, and C.J. Brinker, *Mat. Res. Soc. Symp. Proc.*, Vol. 271, Materials Research Society, Pittsburgh, PA (1992).
50. "Polymer-Derived Silicon Carbide Fibers with Low Oxygen Content," W. Toreki, G.J. Choi, C. Batich, M.D. Sacks, and M. Saleem in *Ceram. Eng. Soc. Proc.*, **13** (9-10), pp. 198-208 (1992).
51. "Swelling Behavior of pH-Sensitive Copolymers Based on Styrene and 4- (or 2-) Vinylpyridine," C. Batich, Y. Jun, C. Bucaria, and M. Elsaabee, *Macromolecules*, **126**, pp. 4675-4681 (1993).
52. "Environmental Stability of Polymers," Tom Atkins and Chris Batich, *MRS Bulletin*, **18**, pp. 40-44 (1993).
53. "Synthesis and Polymerization of 2-Alkylanilines," R. Bodalia, R. Stern, C. Batich, J. Polym. Sci.: A: Polym. Chem., **31**, pp. 2123-2127 (1993).
54. "Polymer-Derived Silicon Carbide Fibers with Low Oxygen Content and Improved Thermomechanical Stability," W. Toreki, C.D. Batich, M.D. Sacks, M. Saleem, G.J. Choi, and A.A. Morrone, *Journal of Composites Science and Technology*, **51**, 145-159 (1994).
55. "Surface Changes in "Silicone" Elastomer Upon Exposure to Saline," J. Marotta, D. DePalma, C. Batich, *Transactions of the Society of Biomaterials* (1994 meeting) **20**, p. 148 (1994).
56. "High Sensitivity Measurement of Swelling of Microspheres," J. Wironen, C. Batich, Y. Jun, C. Shen, *Transactions of the Society of Biomaterials* (1994 meeting), **20**, p. 157 (1994).
57. "Stochastic Modeling of Controlled Release From Poly-styrene-co-4-vinylpyridine Microspheres," C. Shen, P. Rao, C. Batich, J. Moorhead, J. Yan; *J. Cont. Rel.*, **32**, 139-146 (1994).
58. "System for pH-Dependent Release of a Dye in Model Dental Restoration," C. Shen, D. Sarrett, C. Batich, K. Anusavice, *J. Dent. Res.*, **73**, 1833-1840 (1994).
59. "Preparation of the Poly(styrene-co-N,N-Dimethylaminoethyl Methacrylate) Beads for pH-Sensitive Controlled Release," L. Wei, C. Batich, *Soc. for Biomat., Trans.*, **18**, p. 142 (1995).
60. "Effect of Buffer Type on Swelling Behavior of the pH-Sensitive Beads," L. Wei, C. Batich, *Soc. for Biomat., Transact.*, **18**, p. 189 (1995).
61. "In Vitro Measurement of Silicone Bleed From Breast Implants; L. Yu, J. Marotta, N. Hardt, G. LaTorre, C. Batich, *Plast. Reconstr. Surg.*, **97**, 756-764 (1996).
62. "High Precision Measurement of the Swelling of Microspheres," J. Wironen, C. Shen, J. Yan, C. Batich, *J. Appl. Polym. Sci.*, **59**, 825-830 (1996).
63. "Development of a Digitally-Monitored High Flow Rate System for Embolic Materials Testing Used in Arteriovenous Malformation Therapy," S.J. Zambro, K.L. Gage, E.S. Rogers, and C.D. Batich, *Trans. 5th World Biomaterials Congress*, p. 590 (1996).
64. "Effect of Buffer Type on pH-Sensitive Controlled Release," L. Wei, C. Shen, C.D. Batich, and J. Yan, *Trans. 5th World Biomaterials Congress*, p. 773 (1996).
65. "Surface Properties of Foley Catheters: Relationship to Bacteriuria and Fouling," J. Wironen, J. Marotta, E. Beem, and C. Batich, *Trans. 5th World Biomaterials Congress*, p. 175 (1996).
66. "Measurement of Silicon in Tissue Sites Both Adjacent to and Distant From Ruptured and Intact Silicone Breast Implants," J. Marotta, G. LaTorre, C. Batich, N. Sisson Hardt, and L. Yu, *Trans. 5th World Biomaterials Congress*, p. 299 (1996).

67. "Measurement of Gel Bleed from Silicone Breast Implants," J. Marotta, G. LaTorre, C. Batich, N.S. Hardt, W. Yu, 5th World Biomaterials Congress, p. 303 (1996).
68. "Effectiveness of Antifungal Agent Containing Microspheres for Controlling Oral Candidiasis," C. Shen, N. Grimado, D. Marsh, L. Wei, and C. Batich, Proc. Intern. Symp. Cont. Rel. Bioact. Mater., 23 (1996).
69. "Materials Used in Urological Devices," J. Wironen, J. Marotta, M. Cohen, C. Batich, J. Long-Term Effects of Medical Implants, 7(1):1-28 (1997).
70. "Hydroperoxide-Initiated Grafting of Poly(styrene-*stat*-acrylonitrile) onto Ultra-High Modulus Polyethylene Fibers," J.J. Arnold, M.P. Zamora, C.D. Batich, A.B. Brennan, J. Adhesion Sci. Technol., 11(10):1343-1358 (1997).
71. "Fluoride Release From pH Sensitive Microspheres," C.D. Batich and L. Wei, Trans. Soc. Biomat., 24, p. 183, (1998).
72. "Development and In Vitro Evaluation of Sustained Release Ilomastat Devices," A. R. Hadba, J. D. Talton, G. S. Scultz and C. D. Batich, Transactions of the Society of Biomaterials. (2000).
73. "Improved Thermomechanical Stability of Polymer-Derived Silicon Carbide Fibers by Decaborane Incorporation", G. J. Choi, W. Toreki, C. D. Batich, Journal of Materials Science, 35[10] 2421-2427 (2000).
74. "Microsphere-mediated delivery of recombinant AAV vectors in vitro and in vivo," C Mah, I Zolotukhin, TJ Fraites, J Dobson, C Batich, BJ Byrne, Molec. Therapy 1(5): S239 (2000).
75. "Tissue Adhesion To Bioactive Glass Coated Silicone Tubing In A Rat Model of PD Catheters," Edward A. Ross, Christopher D. Batich, William L. Clapp, Judith E. Sallustio and Nadeen C. Lee, The 2001 ASN/ISN World Congress of Nephrology (2001).
76. "Biomedical Applications of Biogenic and Biocompatible Magnetic Nanoparticles," J Dobson, B Gross, C Exley, A Mikhailova, C Batich, H Pardoe, *Modern Problems of Cellular and Molecular Biophysics (Editors S Ayrappetyan & A North)* pgs. 121-130 (2001).
77. "Improved Method of Recombinant AAV2 Delivery for Systemic Targeted Gene Therapy," Cathryn Mah, Thomas J. Fraites, Jr., Irene Zolotukhin, Sihong Song, Terence R. Flotte, Jon Dobson, Christopher Batich, and Barry J. Byrne, Molecular Therapy, 6[1]: 106-112 (2002).
78. "Fabrication and testing of a magnetically activated micropump," S. Santra, P. Holloway and C. Batich, Sensors and Actuators B 87 358-364 (2002)
79. "Tissue Adhesion To Bioactive Glass Coated Silicone Tubing In A Rat Model of PD Catheters," Edward A. Ross, Christopher D. Batich, William L. Clapp, Judith E. Sallustio and Nadeen C., Kidney International, 63 (2):702-708 (2003).
80. "Biopolymers," C Batich and Leamy, Chapter 11, p. 11-3 to p. 11-30, in "Standard Handbook of Biomedical Engineering and Design" ed. M. Kutz, McGraw-Hill (2003).
81. "The Effects Of Epidermal Growth Factor (Egf) And Basic Fibroblast Growth Factor (Bfgf) On Irradiated Rat Parotid Glands," T. Thula, G. Schultz and C. Batich, Abstract for the 2003 Summer Bioengineering Conference, June 25-29, Sonesta Beach Resort in Key Biscayne, Florida
82. "Surface Modification of Dacron-Nitinol Stent Graft for Endovascular Abdominal Aortic Aneurysm (AAA) Repair," O. Moloye, W.A. Lee, G. Schultz and C. Batich, Abstract for the 2003 Summer Bioengineering Conference, June 25-29, Sonesta Beach Resort in Key Biscayne, Florida
83. "A Potential Iron-Based Mechanism for Enhanced Deposition of Amyloid Plaques Due to Cognitive Stimulation in Alzheimer's Disease," J. Dobson and C. Batich, J. Neuropath. & Exper. Neurol., 63 (6): 674-675 (2004).
84. "Folate Conjugated FITC-Doped Silica Nanoparticles for Cancer Detection," C. Batich, D. Chatel, R.A. Mericle, C. Rau-Zink, and S. Santra, PITTCON 2004 (March 7-12, 2004).
85. "Effect of molar mass of an experimental primer on shear bond strength to dentin," ND Richards, KJ Soderhold and CD Batich, J Biomed Mater Res., 70B(2):384-8 (2004).
86. "High-resolution mapping and characterization of anomalous iron compounds in neurodegenerative brain tissue using x-ray absorption spectroscopy," J Collingwood, A Mikhailova, M Davidson, C Batich, WJ Streil, T Eskin, J Terry, R Underhill, and J Dobson, Proceedings of the 9th International Conference on Alzheimer's Disease: Hot Topics Section, Philadelphia, USA (2004).
87. "Fabrication and Characterization of Polycaprolactone Foam Scaffolds for Stem Cell Studies," Michael H. Tollen, Bradley Jay Willenberg, Christopher Batich, Takashi Hamazaki and Naohiro Terada, 2005 MRS Spring Meeting, March 28 - April 1, 2005, San Francisco, CA
88. "Detection, identification and mapping of iron anomalies in brain tissue using X-ray absorption spectroscopy," A. Mikhaylova, M. Davidson, H. Toastmann, J.E.T. Channell, Y. Guyodo, C. Batich, and J. Dobson, J.R. Soc. Interface, 2(2), pp. 33-37 (2005).

89. "The Effects of Epidermal Growth Factor (EGF) and Basic Fibroblast Growth Factor (bFGF) on Irradiated Rat Parotid Glands," Taiti T Thula, Gregory Schultz, Roger Tran-Son-Tay, and Christopher Batich, *Annals of Biomedical Engineering*, 33(5), pp.685-695 (2005).
90. "Folate conjugated fluorescent silica nanoparticles for labeling neoplastic cells", Swadeshmukul Santra, Bernd Liesenfeld, Debamitra Dutta, David Chalel, Christopher D. Batich, Weihong Tan, Brij M. Moudgil, and Robert A. Mericle, *Journal of Nanoscience and Nanotechnology*, 5(6), pp.899-904 (2005).
91. "An Advanced Wound Dressing with Superabsorbent, Microbicidal and Haemostatic properties," Bernd Liesenfeld, Gregory Schultz, Christopher Batich, William Toreki, Roy Carr, David Lerner, Gerald Olderman, *Wound Healing Society Annual Meeting 2005*, Chicago, IL (abstract)
92. "A Novel Moist Wound Healing Dressing That Provides Sustained Protease Inhibition Through Antibiotic Release Sustained Protease Inhibition Through Antibiotic Release," Bernd Liesenfeld, Gregory Schultz, Christopher Batich, Roy Carr, and Gerald Olderman, 2005 Clinical Symposium on Advances in Skin and Wound Care (Poster).
93. "An Advanced, Low Cost Wound Care Dressing An Advanced, Low Cost Wound Care Dressing With Microbicidal Properties With Microbicidal Properties," Roy Carr, Bernd Liesenfeld, Gregory Schultz, Christopher Batich, and Gerald Olderman, 2005 Clinical Symposium on Advances in Skin and Wound Care (Poster).
94. "High-resolution x-ray absorption spectroscopy studies of metal compounds in neurodegenerative brain tissue," JF Collingwood, A Mikhaylova, MR Davidson, C Batich, WJ Streit, T Eskin, J Terry, R Barrea, RS Underhill and J Dobson, *Journal of Physics: Conference Series - Fifth International Conference on Fine Particle Magnetism*, 17, pp. 54-60 (2005).
95. "In situ characterization and mapping of iron compounds in Alzheimer's disease tissue," JF Collingwood, A Mikhaylova, M Davidson, C Batich, WJ Streit, J Terry and J Dobson, *Journal of Alzheimers Disease*, 7(4): 267-272 (2005).
96. "Detection, Identification and Mapping of Iron Anomalies in Brain Tissue Using X-Ray Absorption Spectroscopy," A Mikhaylova, M Davidson, JET Channel, Y Guyodo, C Batich, and J Dobson, *Journal of the Royal Society: Interface*, 2: 33-37 (2005).
97. "Structural Modifications in Chronic Microwave Electrodes for Cortical Neuroprosthetics: A Case Study," JC Sanchez, N Alba, T Nishida, C Batich, PR Carney, *IEEE Transactions Neur. Syst. Rehab. Eng* 14, pp. 217-221 (2006).
98. "Self-assembled captech-capillary alginate gel scaffolds with oligochitosan support embryonic stem cell growth," B.J. Willenberg, T.Hamazaki, F. Meng, N. Terada, C. Batich, *Journal of Biomedical Materials Research Part A*, 79 (2): 440-450 (2006).
99. "Evaluation of manufacturing variability, diffusion of filling solutions, and long-term maintenance of occlusion in silicone hydraulic occluders," CW Sereda, CA Adin, CD Batich, LL Archer, CG Goldman, CG Burns, *American Journal of Veterinary Research*, 67(8), 1453-1458 (2006).
100. "Molecular modeling studies of the binding characteristics of phosphates to sevelamer hydrochloride-assessing a novel technique to reduce phosphates contamination," R. Parker, AA Odukafe, D. Fisher, C. Batich, E. Ross and J. Edwards, *Int J Environ Res Public Health*, 3(2), 202-208 (2006).
101. "Preoperative endovascular brain mapping for intraoperative volumetric image guidance: preliminary concept and feasibility in animal models," R.A. Mericle, E.O. Richter, E. Eskioğlu, C. Watkins, L. Prokai, C. Batich, and S. Santra, *Journal of Neurosurgery*, 104 (4): 566-573 (2006).
102. "Real time analysis of the oxidation and iron oxide mineral formation during in-vitro apoferritin loading," Mark R. Davidson, Joanna F. Collingwood, Albina Mikhaylova, Jon Dobson, and Christopher Batich, *Alzheimer's & Dementia: The Journal of the Alzheimer's Association* 2(3), S487 (2006). (abstract)
103. "Iron and Alzheimer's disease: New insights from novel imaging techniques," Jon Dobson, Joanna F. Collingwood, Mark R. Davidson, Quentin A. Pankhurst, Albina Mikhaylova, Dimitri Hautot, Rafal Dunin-Borkowski, Mihaly Posfai, Takeshi Kasama, R.K.K. Chong, and Christopher Batich, *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 2(3), S482 (2006). (abstract)
104. "Characterization and mapping of iron compounds in a huntington's disease transgenic mouse model," Albina Mikhaylova, Joanna Collingwood, Mark Davidson, Dimitri Hautot, Quentin Pankhurst, Wolfgang J. Streit, Christopher Batich, Jon Dobson, and Wisdom Beyhume, *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 2(3), S557-S558 (2006). (abstract)
105. "Synchrotron X-ray study of Alzheimer's tissue demonstrates mixed-valence iron oxide accumulations in superior frontal gyrus," Joanna F. Collingwood, Mark R. Davidson, Albina Mikhaylova, Christopher Batich, and Jon Dobson, *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 2(3), S482 (2006). (abstract)
106. POSTER/abstract: "Tissue Engineering: Intact Decellularized Rat Kidney Scaffolds Seeded With Murine Pluripotent Embryonic Stem Cells," Edward A. Ross, Matthew J. Williams, Nachiro Terada, Christopher A. Adin, and Christopher D. Batich, *American Society of Nephrology's 39th Annual Renal Week Meeting* (Jan 2007).

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107. "Magnetic Hyperthermia Study of Mn-Zn-Fe, Co-Gd-Zn and Zn-Gd-Fe Nanoparticle Composites," S. S. Hayek, C. Chen, G. Flores, C. Batich, and Y. Haik, 2007 MRS Spring Meeting, April 9-13, 2007 (Abstract).
108. "Antimicrobial Advanced Wound Care Dressing," Roy Carr, Bernd Liesenfeld, Gregory Schultz, Christopher Batich, David Moore, Jillian Vella, William Toreki, and Gerald Olderman, 2007 Poster: Symposium on Advanced Wound Care, Tampa, FL, April 28 – May 1, 2007 (POSTER).
109. "Transient Acid Exposure Increases Savelamer HCl Phosphate Binding," EA Ross, WE Scott III, AA Odukale, NA Alba, and CD Batich, *Journal of Pharmaceutical Sciences*, 96(8):2154-60 (August 2007) - (published online June 2007).
110. "Murine embryonic stem cells in a rat decellularized kidney scaffold," CD Batich, MJ Williams, T. Hamazaki, M. Ibanez, CA Adin, WL Clapp, GW Ellison, N. Terada, EA Ross, TERMIS North America 2007 Conference and Exposition, Toronto, Ontario, Canada, June 13, 2007 (Extended abstract).
111. "Persistent Skin Sanitizer (Nimbuderm™) with Sustained Microbicidal Properties," David Moore, William Toreki, Roy Carr, Bernd Liesenfeld, Gregory Schultz, Christopher Batich, Albina Mikhaylova, Paul Dominguez, Jillian Vella, Gerald Olderman, SAWC & WHS 2008, San Diego, CA, April 24-27, 2008. (POSTER - Blue Ribbon Award)
112. "Persistent Skin Sanitizer (Nimbuderm™) with Sustained Microbicidal Properties," David Moore, William Toreki, Roy Carr, Bernd Liesenfeld, Gregory Schultz, Christopher Batich, Albina Mikhaylova, Paul Dominguez, Jillian Vella, Gerald Olderman, 2008 World Union of Wound Healing Societies, Toronto, Ontario, Canada, June 4-8, 2008. (POSTER - Blue Ribbon Award)
113. "High-resolution magnetic resonance imaging to quantify relaxation parameters in Alzheimer's brain tissue," by Joanna F. Collingwood, Saurav Chandra, Mark Davidson, Albina Mikhaylova, Thomas Eskin, Jon Dobson, John Forder, and Christopher Batich, *Alzheimer's & Dementia: The Journal of the Alzheimer's Association* 4(4), T365-T366 (2008). (abstract)
114. "Magnetic nanoparticles as gene delivery agents: enhanced transfection in the presence of oscillating magnet arrays," SC McBain, U Griesenbach, X Xenariou, A Keramane, CD Batich, EWFW Alton and J Dobson, *Nanotechnology*, 19, 405102 (5pp) (2008).
115. "Biopolymers," C Batich and Leamy, Chapter in "Standard Handbook of Biomedical Engineering and Design" 2<sup>nd</sup> ed. M. Kutz, McGraw-Hill (2009), in press.

Publications/Non-Reviewed (includes papers, non-reviewed published abstracts, interviews, letters, etc., \* indicates invited paper)

1. "Topological and Other Consequences of the Metathesis of Cyclic Olefins," Ph.D. Thesis (1974).
2. "Use of Chemical Labels to Distinguish Between Surface Functional Groups Using X-Ray Photoelectron Spectroscopy (ESCA)," C.D. Batich and R.C. Wendt, *Polymer Preprints*, vol. 21 (1), p. 135, March (1980).
3. "XPS Study of Plasma-Deposited Films Containing Silicon," C. Batich, C. Beatty, P. Bierstedt, and S. Varshney, *Organic Coatings and Applied Polymer Science Proceedings*, 46, pp. 134-136 (ACS) (1982).
4. "XPS Study of Plasma-Deposited Films Containing Silicon," C. Batich, C. Beatty, P. Bierstedt, and S. Varshney, "Ultrastructural Processing and Environmental Stability of Advanced Structural and Electronic Materials," Second Annual Report to AFOSR by L. L. Hench (1982).
5. "XPS Study of the Effect of Ozone on Various Styrene/Butadiene Copolymers," M. Ammons, C. Batich, C. Beatty, K. Stephens, and W. Swartz, *Organic Coatings and Applied Polymer Science Proceedings*, 47, pp. 367-371 (ACS) (1982).
- 6.\* Popular Mechanics Interview, "How Glue Sticks," January 1983.
7. "Matrix-Mineral Configuration in Whewellite Kidney Stones: Microchemical Analysis," L. Ogbuji, C. Batich, and B. Finlayson, *Urological Research*, 12 (1), p. 96 (1984).
8. "X-ray Photoelectron Spectroscopy of GaAs Crystal Surfaces After Ion Bombardment," M. Kosinski, Y. Wang, P. Holloway, and C. Batich, Abstracts from 13th Annual Symposium on Applied Vacuum Science and Technology (AVS), February, p. 25 (1984).
9. "Surface Effects on Urinary Catheter Encrustation/An XPS Study," C. Johnson, V. Rodriguez, and C. Batich, Abstracts from 13th Annual Symposium on Applied Vacuum Science and Technology (AVS), February, p. 37 (1984).
- 10.\* "The Last and Next Decade in Surface Analysis," C. Batich, FACCS 11, Abstracts (#62) (1984).
11. AP press release on catheter coatings (eg. St Petersburg Times) (1984).
12. "XPS Studies of the Bonding of Fluorocarbons to Copper, Abstracts," H. Chacin, C. Batich, and J. W. Williams, from 14th Annual Symposium on Applied Vacuum Science and Technology (AVS), p. 39, February 1985.
13. Family Week Magazine, "Surface Coating Catheters," January 1985.

Declaration of Christopher Batich  
Application No. 09/965,740

- 14.\* "Book Review of: Biomaterials Science and Engineering by J. B. Park," C. Batich, IEEE Transactions on Biomedical Engineering, BME-32, p. 990 (1985).
- 15.\* "Practical Applications of Surface Analysis," C. Batich, P. Holloway, and M. Kosinski, Chemtech, 16, pp. 494-499 (1986).
16. "New Attachment Formation Following Controlled Tissue Regeneration Using Biodegradable Membranes," I. Magnusson and C. Batich, Abstract #869 in the International Association for Dental Research, 64th General Session, July 1986.
17. "Preferential Sputtering: Mechanism and Effects Upon Sputter Profiling," P. Holloway, T. Bussing, S. Jeng, and C. Batich, Abstracts AVS National Meeting, October 1986.
18. "An ESCA Investigation of a Poly(oxyethylene-co-(Pivalolactone) Telechelomer," K. Wagener, C. Batich, B. Kirsch, and S. Wanigatunga, Polymer Preprints, 27, p. 142-143 (1986).
19. "Connective Tissue Regeneration and New Attachment on Experimental Periodontal Defects of the Canine Premolar Teeth," B. Collins, I. Magnusson, and C. Batich, Abstract for Amer. Veterinary Dental Soc. Meeting, Phoenix (1987).
20. "The Feasibility of a Semiconductor-Laser Glucose-Detection System for Insulin-Pump Therapy," I. Arrieta, D. Burk, and C. Batich, Abstract for Amer. Diabetes Assoc., 47th Scientific Meeting, June 1987.
21. "Use of Polymeric Coatings to Improve the Storage Life of Seed," S. West, S. H. Loftin, M. Wahl, C. Batich, and C. Beatty, Search, 23, 8-12 (1989).
22. "Toxic Products From Co-firing Institutional Waste, Biomass and Natural Gas," A. Green, D. Purcell, J. Street, C. Batich, J. Wagner, H. VanRavenswaay, D. Clausen, B. Green, T. Cherry, and B. Andrews, Abstract for Florida Section: Air Pollution Control Authority Annual Meeting, Sept. 1989 (Hollywood, FL).
23. "Effects of Molecular Weight and Cross-Linking on Two Preceramic Polymers," Wm. Toreki, C. Batich, Polymer Preprints, p. 237 (1989).
24. J. Appl. Biomater. 1 195 (1990) Letter to the Editor, "Response to Hum et al."
25. "Combustion of Plastics," C. Batich, Extended abstract, AICHE National Meeting, Orlando, Florida, March 1990.
26. "Post-Consumer PVC Needs Special Treatment," C. Batich, Letter to the Editor, Modern Plastics, July 1990.
27. "The Polymerization of Pentadecylaniline by Langmuir-Blodgett Techniques," H. Zhou, C. Batich, R. Stern and R. Duran, Polymer Preprints, 31, pp. 584-585 (1990).
28. "Silicon-Containing Vinyl Polymers as Precursors to Ceramic Materials," Polymer Preprints 31, (2), pp. 611-612 (1990).
29. "High Molecular Weight Polycarbosiiane as a Precursor to Oxygen-Free SiC Fibers," W. Toreki, C. Batich, and G. Choi; Polym. Preprints, 32, pp. 584-585 (1991).
30. Preliminary Evaluation of Plastics Degradation; Evaluation and Testing, Report 91-2 of the State U. System of Florida Center for Solid and Hazardous Waste Management, p. 1-285, April, L. Miller, J. Earle, C. Batich, C. Givens, E. Morales, J. Johnson, H. Lee, M. Roberts.
31. "Polymer-Derived Silicon Carbide Fibers with Low Oxygen Content," W. Toreki, G. Choi, C. Batich, M. Sacks and M. Saleem, presented at the 16th Annual Conference and Exposition on Composites and Advanced Ceramics (American Ceramic Society, Cocoa Beach, FL January 7-10, 1992. Abstract.
32. "Polymer-Derived Silicon Carbide Fibers with Improved Thermomechanical Stability," W. Toreki, C. Batich, M. Sacks, M. Saleem, and G. Choi, Presented at the Materials Research Society Meeting, San Francisco, CA, April 27-May 1, 1992. Abstract.
33. "Letter to the Editor" (re. breast implants), J. Biomed. Mat. Res. 27 1209 (1993).
34. "Letter to the Editor" (Immigration), Wall Street Journal, April 18, 1994.
35. "Letter to the Editor" (health care for the brain), Tampa Tribune, January 3, 1995, p. 10.
- 36.\* "Biomedical Engineering at the University of Florida," C. Batich, Biomaterials Forum, Sept. 1995, p. 12-13.
- 37.\* "Silicone Degradation Reactions," C. Batich, D. DePalma, J. Marotta, G. Latorre, N. Hardt, in "Immunology of Silicones," ed. M. Potter and N. Rose, Springer Verlag (Berlin), p. 13-23 (1996).
38. "Macrophage-Silicone Interactions in Women with Breast Prostheses," N. Hardt, J. Emery, G. LaTorre, C. Batich, and W. Winter, in "Immunology of Silicones," ed. M. Potter and N. Rose, Springer Verlag (Berlin), p. 245-252 (1996).
39. "Regional Therapy for Liver Tumors: A Novel Embolic Agent and Drug Delivery System," R. Ksontini, D. Willingham, J.N. Vauthay, A. Leckey, C.D. Batich, UF Shands Cancer Center GI Cancer Letter, Vol. 4, No. 1 (1997).
40. "Preliminary Investigation of the Effect of Poly(ethylene glycol) Addition on the Release Characteristics of Model Drug from Poly(lactide-co-glycolide) Matrices," R. Hadba, C. Batich, December 1997, MRS meeting abstract.
41. "Synthesis of Poly(vinylalcohol) Hydrogels: Evaluation of Thermal, Thermomechanical, Mechanical, and Swelling Properties," R. Hadba, L. Mei, C. Batich, December 1997, MRS meeting abstract
42. Book review: "Scientific and Clinical Applications of Magnetic Carriers," eds. U. Hafeli, W. Schuut, J. Teller, and M. Zborowski, New York: Plenum, 1997, 628 pp.

Declaration of Christopher Batich  
Application No. 09/965,740

43. Book review: "Natural Fibers, Biopolymers, and Biocomposites," eds. A.K. Mohanty, M. Misra, and L.T. Drzal, CRC Press, Taylor and Francis Group, 2005, 874 pages.
44. "An image-based skeletal canine model for pre-clinical evaluations of osteosarcoma molecular radiotherapy," R.J. Milner, L. Padilla, C. Lee, C. Batich, J. Farese, A. Shahlaee, W. Bolch, 26th Annual Conference of the Veterinary Cancer Society, Callaway Gardens, Pine Mountain, GA, October 19-22, 2006. Proceedings page 61.
45. "Iron Imaging and Analysis in Neurodegenerative Diseases," Mark Davidson, Joanna F. Collingwood, Saurav Chandra, Albina Mikhaylova, Thomas Eskin, Jon Dobson, John Forder, and Christopher Batich, invited talk presented at the "Conference on Computational Neuroscience 2008", February 20-21, 2008, University of Florida, Gainesville, Florida.
46. "Regarding Ethanol from Com," (letter to the editor) C. Batich, Chemical and Engineering News, 86(16) (April 21, 2008).
47. "Better use of existing knowledge" (letter to the editor) C. Batich, Science. 2007 Jun 15;316 (5831):1564.

Book

"Adhesion in Solids," D. Mattox, J. Baglin, R. Gottschall, and C. Batich, editors, Materials Research Society Symposium Proceedings, Vol. 119, MRS Pub. (1998).

Patents (does not include 15 applications published on the USPTO website now under review)

1. USP #4,728,694, "Process for Making Hydrophilic Polyethylene," C. Batich and A. Yahiaoui, issued 1988.
2. USP #4,961,707, "Guided Periodontal Tissue Regeneration," I. Magnusson and C. Batich, issued 1990.
3. USP #5,171,722, "SiC Fibers Having Low Oxygen Content and Methods of Preparation," W. Toreki and C. Batich, issued December 15, 1992.
4. USP #5,242,870 (CIP of USP #5,171,722), "SiC Fibers Having Low Oxygen Content and Methods of Preparation," W. Toreki and C. Batich, issued September 7, 1993.
5. USP #5,278,110 (CIP of USP #5,171,722), "SiC Fibers Having Low Oxygen Content and Methods of Preparation," W. Toreki and C. Batich, issued January 11, 1994.
6. USP #5,286,495, "Process for Microencapsulating Cells," C. Batich and F. Vaghefi, issued February 15, 1994.
7. USP #5,322,165, "Sharp Instrument Encasement System," R. Melker, G. Miller and C. Batich, issued June 21, 1994.
8. USP #5,376,553, "Novel Clinical Marker and Therapeutic Agent in Kidney Stone Disease and Methods of Use," W. Thomas, D. Purich, C. Batich, issued December 27, 1994.
9. USP #5,523,075, "Materials and Methods Utilizing a Temporary Visual Indicator," R. Fuerst, R. Melker, C. Batich, issued June 4, 1996.
10. USP #5,532,029, "Materials and Methods Utilizing a Temporary Visual Indicator," R. Fuerst, R. Melker, C. Batich, issued July 2, 1996.
11. USP #5,550,259 (CIP of USP #5,376,553), "Novel Clinical Marker and Therapeutic Agent in Kidney Stone Disease and Methods of Use," W. Thomas, D. Purich, C. Batich, issued August 27, 1996.
12. USP #5,554,147, "Novel Compositions and Devices for Controlled Release of Active Ingredients," C. Batich, M. Cohen, K. Foster, issued September 10, 1996.
13. USP #5,601,804, "Diclitate Cyclic Diester Dentifrice," W. Thomas, C. Batich, D. Purich, issued February 11, 1997.
14. USP #5,604,103, "Kit for Detection of Clinical Marker in Kidney Stone Disease," W. Thomas, C. Batich, D. Purich, issued February 18, 1997.
15. USP #5,607,417 (CIP of USP #5,554,147), "Compositions and Devices for Controlled Release of Active Ingredients," C. Batich, M. Cohen, K. Foster, issued March 4, 1997.
16. USP #5,607,964, "Clinical Marker and Therapeutic Agent in Kidney Stone Disease and Methods of Use," W. Thomas, C. Batich, D. Purich, issued March 4, 1997.
17. USP #5,648,099 (CIP of USP #5,286,495), "Process for Microencapsulating Cells," C. Batich and F. Vaghefi, issued July 15, 1997.
18. USP #5,719,138, "Method for Complexing a Free Metal Ion," W. Thomas, C. Batich, D. Purich, issued February 17, 1998.
19. USP #5,776,701, "Materials and Methods for Detecting Oxalate," C. Batich, R. Mans, and I. McFettridge, issued July 7, 1998.
20. Australia Patent #736,846, "Modable bioactive compositions," L. Hench, G. LaTorre, J. West, J. Wilson, W. Toreki III, and C. Batich, issued July 10, 1998.

Declaration of Christopher Batich  
Application No. 09/965,740

21. USP #5,788,687 (CIP of USP #5,554,147)\*Compositions and Devices for Controlled Release of Active Ingredients," C. Batich, M. Cohen, K. Foster, issued August 4, 1998.
22. USP #5,792,416, "Preparation of boron-doped silicon carbide fibers," M. Sacks, W. Toreki, G. Choi, C. Batich, issued August 8, 1998.
23. USP #5,776,701, "Materials and Methods for Detecting Oxalate," C. Batich, R. Mans, and I. McFettridge, issued July 7, 1998.
24. USP #5,788,687 (CIP of USP #5,554,147)\*Compositions and Devices for Controlled Release of Active Ingredients," C. Batich, M. Cohen, K. Foster, W. Toreki, issued August 4, 1998
25. USP #5,792,416, "Preparation of Boron-Doped Silicon Carbide Fibers," M. Sacks W. Toreki, G. Choi, C. Batich, issued August 8, 1998.
26. USP # 5,837,645, "Materials and Methods Utilizing a Temporary Visual Indicator," R. Fuerst, R. Melker, C. Batich, issued November 17, 1998.
27. USP # 5,840,290, "Injectable Bio-Active Glass in a Dextran Suspension," L. Hench, G. Latorre, J. West, J. Wilson, W. Toreki III, and C. Batich. Issued November 24, 1998
28. USP #5,851,942, "Preparation of Boron-Doped Silicon Carbide Fibers," M. Sacks, W. Toreki, C. Batich, G. Choi, issued December 22, 1998.
29. USP #5,990,380, "Percutaneous Biofixed Medical Implants," C. Batich, J. Marotta, G. LaTorre, L. Hench, issued November 23, 1999.
30. USP #5,997,891, "Materials and Methods Utilizing a Temporary visual Indicator," R. Fuerst, R. Melker and C. Batich, issued December 7, 1999.
31. USP #6033,888, "Process for Microencapsulating Cells," C. Batich and Vaghefi, issued March 7, 2000.
32. USP #6,051,247, "Moldable Bioactive Compositions," L. Hench, W. Toreki III, C. Batich, J. Wilson, J. West, G. Latorre. Issued April 18, 2000.
33. USP #6,139,821, "Materials and methods utilizing a temporary visual indicator," R. Fuerst, C. Batich, R. Melker. Issued October 31, 2000.
34. USP #6,190,684, "Injectable Bio-Active Glass in a Dextran Suspension," L. Hench, G. Latorre, J. West, J. Wilson, W. Toreki III, and C. Batich. Issued February 20, 2001.
35. USP #6,242,230, "Process for Microencapsulating Cells," C. Batich and F. Vaghefi. Issued June 5, 2001.
36. USP #6,274,159, "Surface Modified Silicone Drug Depot," J.S. Marotta, C.D. Batich and N.S. Hardt. Issued August 14, 2001.
37. USP # 6,299,930, "Percutaneous biofixed medical implants," J.S. Marotta, G. LaTorre, C. Batich, L.L. Hench. Issued October 9, 2001.
38. USP # 6,306,422, "Compositions and devices for controlled release of active ingredients," C.D. Batich, M.S. Cohen, K. Foster, W.Toreki III. Issued October 23, 2001.
39. USP # 6,602,524, "Microspheres For Use In The Treatment Of Cancer," C.D. Batich, A. Leckey, and J.N. Vauthey. Issued August 5, 2003.
40. USP # 6,667,368, "Amino acid functionalized polymers for graft copolymerizations," A.B. Brennan, M.P. Zamora, C.D. Batich, and K.B. Wagener. Issued December 23, 2003.
41. Eurasian Patent # 004160, "Intrinsically Bactericidal Absorbent Dressing and Method of Fabrication," C.D. Batich, G.S. Schultz, B.A. Mast, G.M. Olderman, D. Lerner. Issued February 26, 2004.
42. USP # 6,812,314, "Thermally Responsive Polymer Materials and Uses Thereof," G.J. Lunardi, C.D. Batich, J.J. Zacca, K.R. Bergre, and S. Sargent. Issued November 2, 2004.
43. USP # 7,001,616, "Microspheres For Use In The Treatment Of Cancer," C.D. Batich, A. Leckey, and J.N. Vauthey. Issued February 21, 2006.
44. USP # 7,045,673, "Intrinsically bactericidal absorbent dressing and method of fabrication," C.D. Batich, B.A. Mast, G. Schultz, G.M. Olderman, and D.S. Lerner. Issued May 16, 2006.
45. USP # 7,122,030 B2, "Ferroelectric Hyperthermia System and Method for Cancer Therapy," G.P. Flores and C.D. Batich. Issued October 17, 2006.
46. USP # 7,169,853, "Polyamide graft copolymers," Anthony B. Brennan, Michael P. Zamora, Christopher Batich, and Kenneth B. Wagener. Issued January 30, 2007.
47. USP # 7,390,628 B2, "Microparticle-based diagnostic methods," Christopher D. Batich. Issued June 24, 2008.

Theses and Dissertations Supervised

Tom Saitta, L.L.D. (M.S.), Surface Crystallinity of PET (1984).

- Ali Yahiaoui (M.S.), Covalent Attachment of Hydrophilic Groups to the Surface of Low Density Polyethylene (1986).  
Vivian Rodrigues (M.S.), Fluorocarbon Surface Modifications of Elastomers (1987).  
Yuan-Chang Lin (Ph.D.), Thermal Effects of Formation and Removal of Thin Polymer Films (1987).  
David Sarrett, D.D.S. (M.S.), Wear Behavior of Dental Composite Restorative Materials (1988).  
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Shaye-Wen Shang (Ph.D.), A Quantitative Theory of Composite Interface Effects (1989).  
Farid Vaghefi (M.S.), Microencapsulation of Enzymes (1990).  
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Kirk Foster (M.S.), Prevention of Encrustation of Urinary Stents (1992).  
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Angela Campbell (Ph.D.), Synthesis and Characterization of Biodegradable Hydrogels for Tissue Scaffolds (1992).  
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Guang Choi (Ph.D.), Chemical Modification of Silicon Carbide, Polymer Derived Fibers for Enhanced Thermal Stability (1993).  
Lei Wei (M.S.), Development of Styrene-Co-N,N-Dimethylaminoethyl Methacrylate Hydrogel Microspheres for pH-Sensitive Controlled Drug Release (1995).  
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Ahmad Hadba (M.S.), Development of Sustained Release Polymeric Formulations for the Ocular Delivery of Ionomast: An *In Vitro* Evaluation (1997).  
Adam Leckey (M.S.), Active Microspheres for Use in the Treatment of Hepatic Tumors (1997).  
James Marotta (Ph.D.), Bioactive Glass Coated Silicone for Percutaneous Devices with Improved Tissue Interaction (1997).  
John Wironen (Ph.D.), pH Controlled Drug Release for Dental Applications (1997).  
Chris Sakezles (Ph.D.), A novel Endotracheal tube (1998).  
Wei Lei (Ph.D.), Modulated release of Fluoride from polymers (Fall 1998).  
Travis Arola (M.S.), Physical Modeling of Coronary Arteries (Fall 1998).  
Gilberto Lunardi (Ph.D.) – Thermal and permeation properties of poly(ethylene-co-1-alkene)s (2000).  
Nicola Richards (Ph.D.) – Effects of molecular mass of a priming resin on bond strength to dentin (2001).  
John Rotella (M.S.) – Noninvasively measuring glucose: a salivary glucose dip stick (2001).  
Matthew Eadens (M.S.) – Endovascular Drug Delivery (2002).  
Patrick Leamy (PhD) – Microsphere Synthesis (May 2003).  
Talli Thula (MS) – Salivary Gland Protection During Radiotherapy (May 2003).  
Glen Flores – Ferroelectric Hyperthermia for Cancer Therapy (August 2003).  
Bernd Liesenfeld (Ph.D.) – Superparamagnetic Folate-Immobilized Dye Labeled Microspheres For Oral Cancer Screening (April 2004).  
Albina Mikhailova (Ph.D.) – Iron Biomimeticization of Brain Tissue and Neurodegenerative Disorders (December 2004).  
Mike Totton (MS) – "Fabrication of Coated Biodegradable Polymer Scaffolds and Their Effects on Murine Embryonic Stem Cells" (April 2005).  
Bradley Willenberg (PhD) – "Modular Tissue Scaffolding Tools: A New Family of Self-Assembled Biomaterials Derived from Copper-Capillary Alginate Gels" (August 2005).  
Olajompo Molye (PhD) – "Modification of Endovascular Stent Graft for Abdominal Aortic Aneurysm Repair" (December 2006).  
John Azek (PhD) – "PLGA-PEG-PLGA Microspheres as a Delivery Vehicle for Antisense Oligonucleotides to CTGF: Implications on Post-Surgical Peritoneal Adhesion Prevention" (December 2006).  
Talli Thula (PhD) – "Deformable Microparticles with Multiple Functions for Drug Delivery and Device Testing" (May 2007).  
JP Bullivant (MS) – "Table Superparamagnetic Ferrofluids for the Treatment of Secondary Liver Cancer by Hyperthermia" (May 2008).

Reviewer For

Encyclopedia of Polymer Science and Technology  
Engineered Materials Handbook (ASM)  
J. American Ceramics Society  
J. American Chemical Society



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J. Electron Spectroscopy  
J. Industrial and Engineering Science  
J. Organic Chemistry  
J. Physical Chemistry  
J. Surface and Interfacial Science  
J. Vacuum Science and Technology  
Macromolecules  
National Institutes of Health (research resources, small business grants/SBIR)  
National Science Foundation  
Scanning Electron Microscopy  
Petroleum Research Fund  
J. Applied Biomaterials  
J. Biomedical Materials Research  
National Institutes of Health (research resources, small business grants)  
National Science Foundation  
Petroleum Research Fund  
Scanning Electron Microscopy  
MRS Book Review Board  
Acta Biomaterialia

Panel Member For

Polymer Principles In the Undergraduate Curriculum, Florida ACS meeting, panel discussion (1986).  
National Institute for Trial Advocacy, course requiring expert witness (1985-1994).  
Materials Research Society, Spring 1988 meeting, co-organizer of Adhesion Symposium.

Other Recent Meeting Activities:

Co-chair, "Surface Analysis" session of Soc. for Biomat. Meeting (San Francisco, 1995).  
Co-chair, "Silicones" session of World Biomat. Congress Meeting (Toronto, 1996).  
Co-chair, "Modification of Biomaterials Surfaces" session of Soc. for Biomat. Meeting (New Orleans, 1997).  
Co-chair, "Progress in Drug Delivery" session of Soc. for Society of Biomaterials Meeting (St. Paul, Minn., 2001)  
Chair, "Dental Materials" session for Society of Biomaterials Meeting (Tampa, FL 2002)  
Moderator for session at "Regeneration One" meeting at Amelia Island (Dec 2007)

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